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The Brazilian species of the genus *Eustema* Schaus, 1901, with description of a new genus and species (Lepidoptera: Notodontidae, Heterocampinae)

Vitor O. Becker

Abstract

Three species of *Eustema* Schaus, 1901 are recorded for Brazil: *E. argentata* Becker, sp. n., *E. dara* (Druce, 1894) and *E. opaca* Schaus, 1921; *E. rapana* Jones, 1908, originally assigned to the genus, is not congeneric with the other species; a new genus is proposed, *Rapanodonta* Becker, gen. n., to include it. *Eustema sericea* Schaus, 1910, is a new synonymy of *E. dara* (Druce, 1894). The larvae of *E. dara* and *E. opaca* feed on the leaves of *Roupala montana* and *Grevillea* sp. (Proteaceae).

KEY WORDS: Lepidoptera, Notodontidae, Heterocampinae, *Eustema*, new genus, new species, new synonymy, Brazil.

Las especies brasileñas del género *Eustema* Schaus, 1901, con la descripción de un género y una especie nuevos (Lepidoptera: Notodontidae, Heterocampinae)

Resumen

Tres especies de *Eustema* Schaus, 1901 se registran para Brasil: *E. argentata* Becker, sp. n., *E. dara* (Druce, 1894) y *E. opaca* Schaus, 1921; *E. rapana* Jones, 1908, originalmente asociada con este género, no es congenera con las demás especies, se propone un nuevo género, *Rapanodonta* Becker, gen. n., para incluirla. *Eustema sericea* Schaus, 1910, es una nueva sinonimia de *Eustema dará* (Druce, 1894). Las orugas de *E. dara* y *E. opaca* se alimentan de las hojas de *Roupala montana* y *Grevillea* sp. (Proteaceae).

PALABRAS CLAVE: Lepidoptera, Notodontidae, Heterocampinae, *Eustema*, nuevo género, nueva especie, nueva sinonimia, Brasil.

Introduction

The genus *Eustema* Schaus, 1901 includes seven species (BECKER, 2014: 8), two of them from Brazil. A third species originally described from Mexico and Costa Rica, is recorded for the country for the first time. In order to place this species in the context of the genus, the type-material of the other species had to be examined and, as a result, it was found that one species is undescribed, one name is a synonym, and one of the species is not congeneric with the type-species of the genus, cannot be associated with any of the available ones, requiring a new genus to accommodate it.

Material and methods

This work is based on 51 specimens, 26 (10 genitalia preparations) in VOB, 6 in the CPAC, 12 in AMC, and 7 in DZUPR. Synoptic collections, representing all these species were taken to the NHMUK

and the USNM and were compared with the types deposited there. The type material of all species they were examined. The holotype of the new species is provisionally deposited in VOB, and will be transferred, together with the collection, to a Brazilian institution in the future. Genitalia were prepared following the methods described by ROBINSON (1976). Terms for morphological characters follow HODGES (1971).

Abbreviations

AMC	= Alfred Moser collection, São Leopoldo, Rio Grande do Sul, Brazil
CPAC	= Centro de Pesquisa Agropecuária dos Cerrados, Planaltina, DF Brazil
DF	= Distrito Federal, Brazil
DZUPR	= Departamento de Zoologia, Universidade Federal do Paraná, Curitiba, Brazil
FW	= Forewings
GO	= Goiás State, Brazil
G. s.	= genitalia slide
HW	= Hind wings
MG	= Minas Gerais State, Brazil
MT	= Mato Grosso State, Brazil
NHMUK	= Natural History Museum, United Kingdom
PR	= Paraná State, Brazil
RO	= Rondônia State, Brazil
RS	= Rio Grande do Sul State, Brazil
SP	= São Paulo State, Brazil
TS	= Type-species
USNM	= United States National Museum, Washington
VOB	= Vitor O. Becker collection, Serra Bonita Reserve, Camacan, Bahia, Brazil

Results and discussion

The study of the material available revealed that the two species described from Mexico and Costa Rica are synonyms, and is recorded for the first time for Brazil, based on specimens reared from larvae and on specimens collected at light, and another one is undescribed. *E. rapana* Jones, 1908, originally described from Brazil, is not congeneric with the type-species of this genus and a new genus is proposed here to accommodate it.

Eustema Schaus, 1901

Eustema Schaus, 1901. *Trans. Ent. Soc. Lond.*, **1901**: 285

TS: *Stilpnobia dara* Druce, 1894. *Ann. Mag. Nat. Hist.*, (6) **13**: 355, by original designation.

= *Eustemides* Dyar, 1908. *Proc. U. S. Nat. Mus.*, **9**: 46.

TS: *Eustema carama* Druce, 1904. *Ann. Mag. Nat. Hist.*, (7) **13**: 352-363, by original designation [Synonymized by BECKER, 2014: 8].

Diagnosis: Medium size, mostly inconspicuous gray, with antenna pectinate throughout, not at basal half only, as a pattern for the family. They remind some large species of *Paracles* Walker, 1855 (Erebidae: Arctiinae). Male genitalia with uncus bifid, socii sharp-pointed, otherwise typical for the family. Female genitalia with ostium broad, conical; ductus bursae narrow, half-length as bursae diameter; corpus bursae oblong; signum a round plate.

Distribution: Southern Mexico to southern Brazil.

Eustema dara (Druce, 1894) (Figs 1-4, 10)

Stilpnobia (?) *dara* Druce, 1894. *Ann. Mag. Nat. Hist.*, (6) **13**: 355

Holotype ♀, MEXICO: Orizaba (NHMUK) [examined].

= *Eustema sericea* Schaus, 1910. *Ann. Mag. Nat. Hist.*, (8) 6: 580

Lectotype ♂, COSTA RICA: El Sitio [de Avance], (Schaus) (USNM), designated by SCHINTLMEISTER, 2016: 481 [examined]. **Syn. n.**

Diagnosis: Gray, veins dark gray, abdomen dark fuscous, banded ochreous, to golden ochreous. Male genitalia with socii long, thin, parallel; gnathos long, widely curved, sharp pointed; aedeagus straight, cylindrical, with a strong, curved hook at tip.

Material studied: 14 ♂♂ (5 g. s. 4270, 4841, 5394, 5395, 5399), 11 ♀♀ (3 g. s. 5396-5398). BRAZIL: DF, Planaltina, 15°53'S - 47°42'W, 1100 m, 2 ♂♂, 28-IV, 29-IX-1976 (Becker 18458, 18468); Idem, 2 ♂♂, 2 ♀♀, 22-X-1977, 14-IV-1978, 3-XII-1982 (Becker) (CPAC 6158, 6944, 9527); MG, Pirapora, 500 m, 2 ♀♀, 29-X-1988 (Becker 59949); GO: Ilha do Bananal, Rio Javaré, 200 m, 1 ♀, 14-19-IX-1985 (Becker 64077); Idem, Alvorada do Norte, 415 m, 2 ♂♂, 2 ♀♀, 11-14-XI-2003 (Becker, Ferro & Emery, 135056); MT, Chapada dos Guimarães, 800 m, 1 ♀, 25-30-X-1997 (Becker 110686); SP, Ilha Solteira, 21°31'S - 51°19'W, 350 m, 1 ♀, 9-11-X-2001 (Becker 132907). NICARAGUA: Matagalpa, Sierra Negra, 13°00'N - 85°54'W, 1300 m, 4 ♂♂, 3 ♀♀, 26-VIII-2000 (Becker 126332) (VOB). PANAMA: Chiriquí, Boquete, 1500 m, 1 ♂, 5-6-V-2007 (Moser) (AMC).

Distribution: Southern Mexico to Central Brazil.

Food plants: Reared by the author on *Roupala montana* Aubl. and on *Grevillea* sp. (Proteaceae).

Remarks: The series from Nicaragua has the body dark fuscous, matching the type of *Eustema dara*, whereas the series from Brazil have the body golden ochreous, as the type of *E. sericea*. The genitalia of both sexes, of both forms, are identical.

Eustema opaca Schaus, 1921 (Figs 5-6)

Eustema opaca Schaus, 1921. *Proc. U. S. Nat. Mus.*, 59: 384

Holotype ♂, BRAZIL: RJ, Nova Friburgo, 11-V-1913 (Arp) (USNM) [examined].

Diagnosis: Dark gray, abdomen golden ochreous, banded dark fuscous; FW with an ill-defined dark patch beyond cell, before the diffuse, grey postmedial band.

Material studied: 18 ♂♂ (2 g. s. 4207, 5393), 7 ♀♀. BRAZIL: PR, Quatro Barras, Banhado, 800 m, 1 ♂, 21-I-1971 (Becker 22863) (VOB); SP, Campos do Jordão, 22°46'S - 41°35'W, 1600 m, 2 ♂♂, 1 ♀, 23-27-I-2001 (Becker 130821) (VOB); DF, Planaltina, 15°53'S - 47°42'W, 1100 m, 1 ♀, 7-X-1976 (Becker) (CPAC 1448); RS, Morro Reuter, Faz. Padre Eterno, 29°32'S - 50°58'W, 500-600 m, 11 ♂♂, 2 ♀♀, 22-XII-1997, 18-XII-1999, 7-I-2000, 4-II-2002; 12-15-XI-2005, 26-27-X-2006, 5-6-XI-2011; 8-9-XI-2013; 4-8-XI-2016 (Moser); SC, São Bento do Sul, 26°19'S - 49°18'W, 600-800 m, 3 ♂♂, 1 ♀, 4-I-1999, II-1999, 8-12-VIII, 5-IX-2007 (Moser) (AMC, DZUPR).

Food plant: *Roupala montana* Aubl. (Proteaceae) (DINIZ *et al.*, 2013: 179).

Distribution: Southern and Central Brazil.

Remarks: The darker pattern and the diffuse, dark gray patch beyond cell, distinguish it from *E. dara*, the most similar.

Eustema argentata Becker, sp. n. (Fig.7)

Material examined: Holotype ♀, BRAZIL: RO, Porto Velho, 180 m, 24-30-IV-1989 (Becker 62125, g. s. 5540) (VOB).

Diagnosis: FW silvery gray, with contrasting gray veins, and diffuse bands crossing from costa to dorsum and tornus; HW gray; abdomen pale ochreous.

Description: Female FW 22 mm (50 mm wingspan). Body dark fuscous. FW silvery gray, veins dark gray, base diffuse gray, three diffuse gray bands crossing wing: antemedial straight, postmedial curved, straight from costa to M3, bent inwards, joining antemedial on dorsum, subterminal ill-defined, interrupted on veins; cilia dark gray. HW dark gray, veins slightly contrasting. Genitalia (fig.): Lamella antevaginalis wide, basal margin round; ostium broad, conical; ductus bursae membranous; corpus bursae oblong, constricted at middle; signum a round plate.

Etymology: From the Latin *argentum* = silver; feminine.

Remarks: Related to *E. albifasciata* (Schaus, 1920) and *E. fassli* (Dognin, 1922), similar to the latter, which very likely is the female of the former.

***Rapanodonta* Becker, gen. n.**

TS: *Eustema rapana* Jones, 1908. *Trans. Ent. Soc. Lond.*, **1908**: 169.

Diagnosis: Medium size; FW fuscous with a large, triangular, brown area from cell to dorsum. HW dark fuscous. Male genitalia with uncus a short-curved rod; socii thin bent distad, arms parallel, sharp pointed; sacculus with long, acute projection, at mid-way of internal edge.

Description: Male FW 25 mm (56 mm wingspan), female . Antenna half size as FW, bipectinate to near apex. Male genitalia with uncus a short, curved rod, with a groove towards apex; socii cylindrical to before apex, parallel; valva subrectangular, thin, semi membranous between costa and sacculus; costa slender, strongly sclerotized, rounded distad; apex with an indentation distad of sacculus; sacculus broad, strongly sclerotized, a long, curved, sharp-pointed expansion at base; juxta subrectangular; vinculum round. Aedeagus straight, nearly cylindrical, slightly tapering towards apex; vesica with small, spined cornutus. 8th sternite with basal margin broad triangular, distal margin strongly concave in the middle.

Etymology. A combination of two names: *rapana* and *Notodonta*; feminine.

Remarks: Similar to *Eustema* in wing venation, and shape of antenna. In *Rapanodonta* antenna longer, and male genitalia quite distinct.

Rapanodonta rapana (Jones, 1908), **comb. n.** (Figs 8-9)

Eustema rapana Jones, 1908. *Trans. Ent. Soc. Lond.*, **1908**: 169

Syntype ♂, [BRAZIL]: PR, Curitiba (Jones) (NHMUK), here designated [examined].

Diagnosis: The same as for the genus (see above).

Material studied: 2 ♂♂ (2 g. s., 4082, Moser), 1 ♀ (1 g. s. Moser). BRAZIL: RS, Pelotas, 10 m, 1 ♂, 8-VIII-1967 (Becker 1603) (VOB); Idem, São José dos Ausentes, Faz. Potreirinhos, 28°36'S - 49°58'W, 1200 m, 1 ♂, 5-7-XI-2004 (Moser); Idem, SC, Lages, 27°48'S - 50°24'W, 1150 m, 1 ♀, 1-IX-1999 (Moser) (AMC).

Remarks: Described from an unspecified number of males, of which, five were traced.

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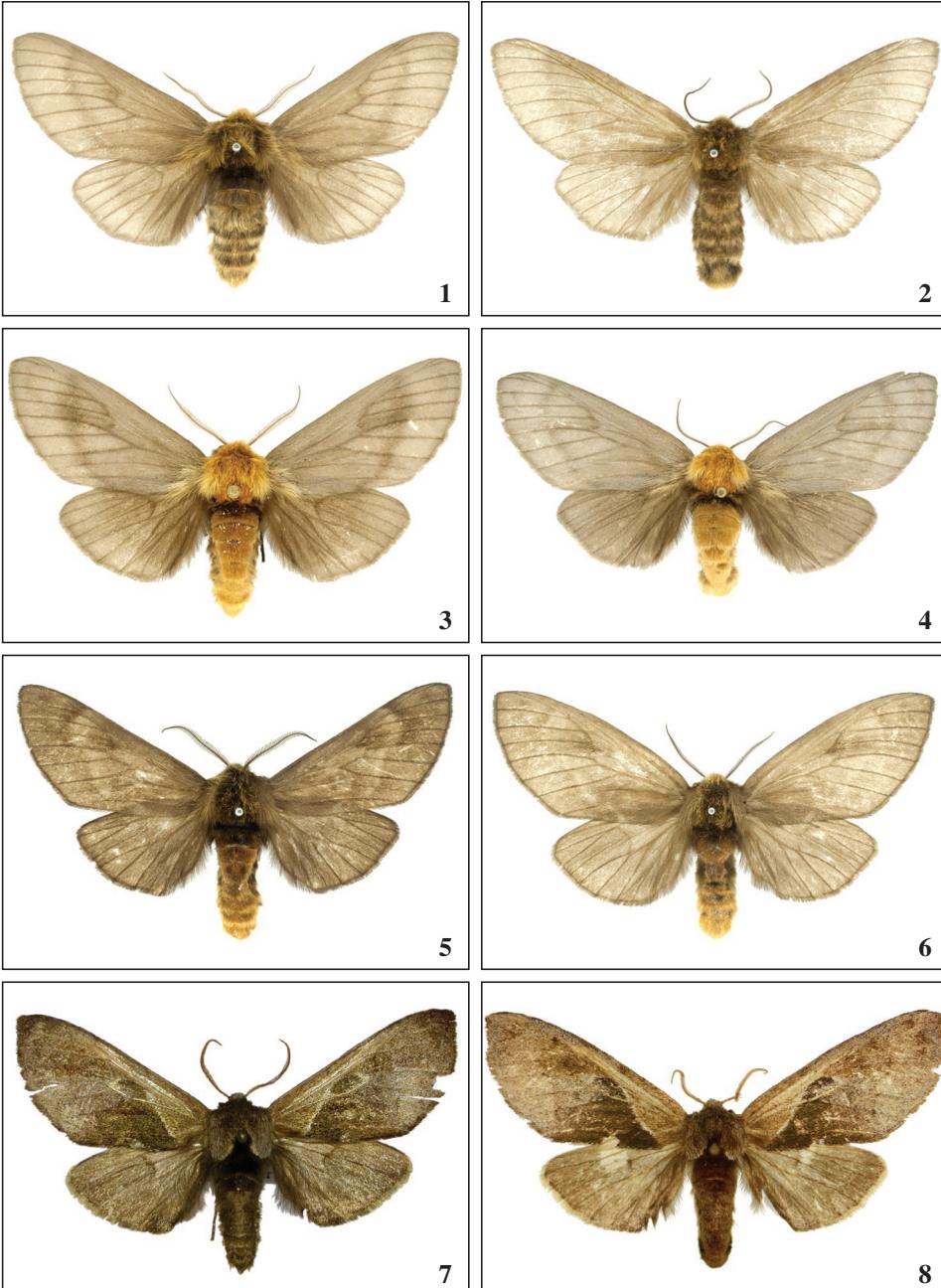
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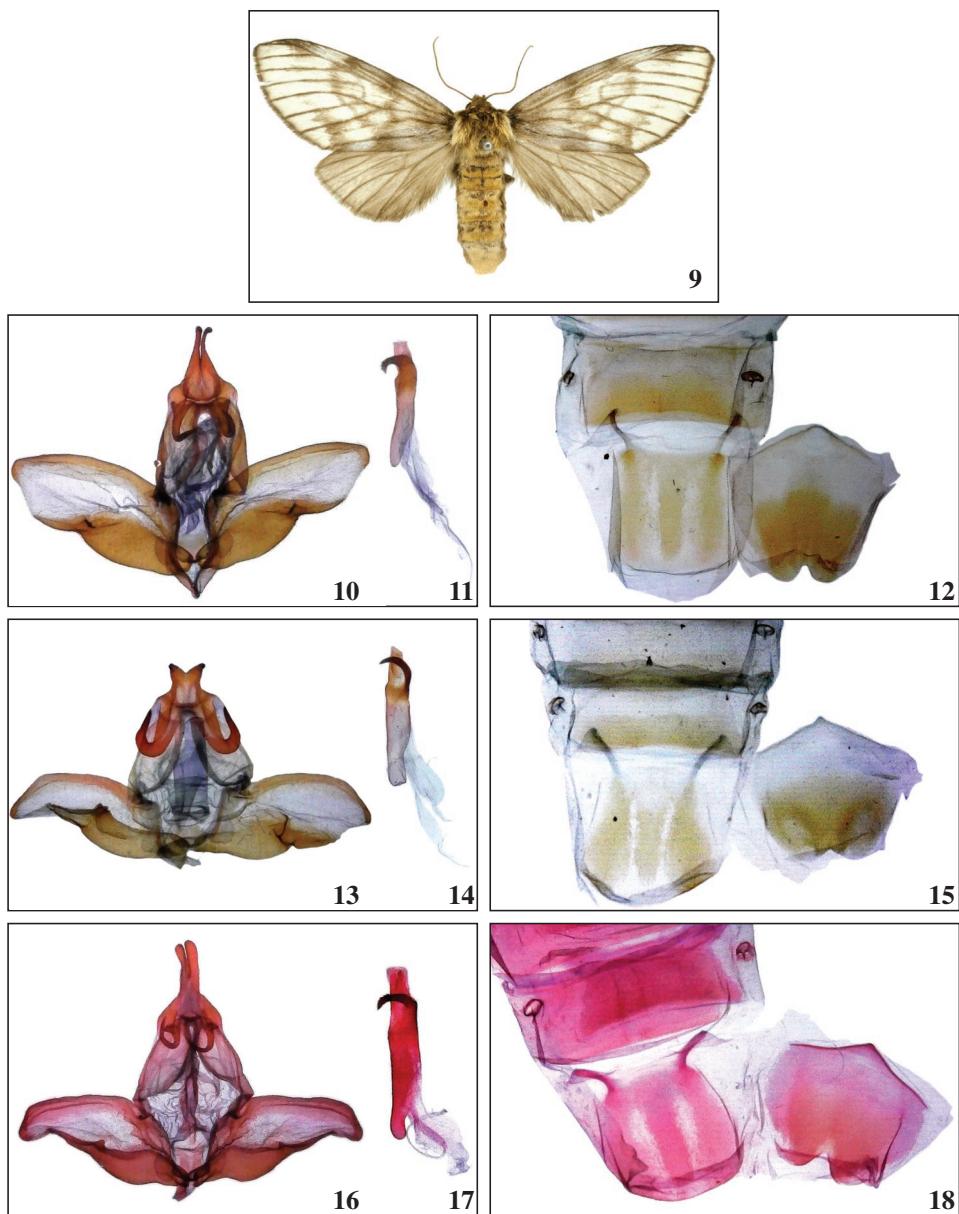
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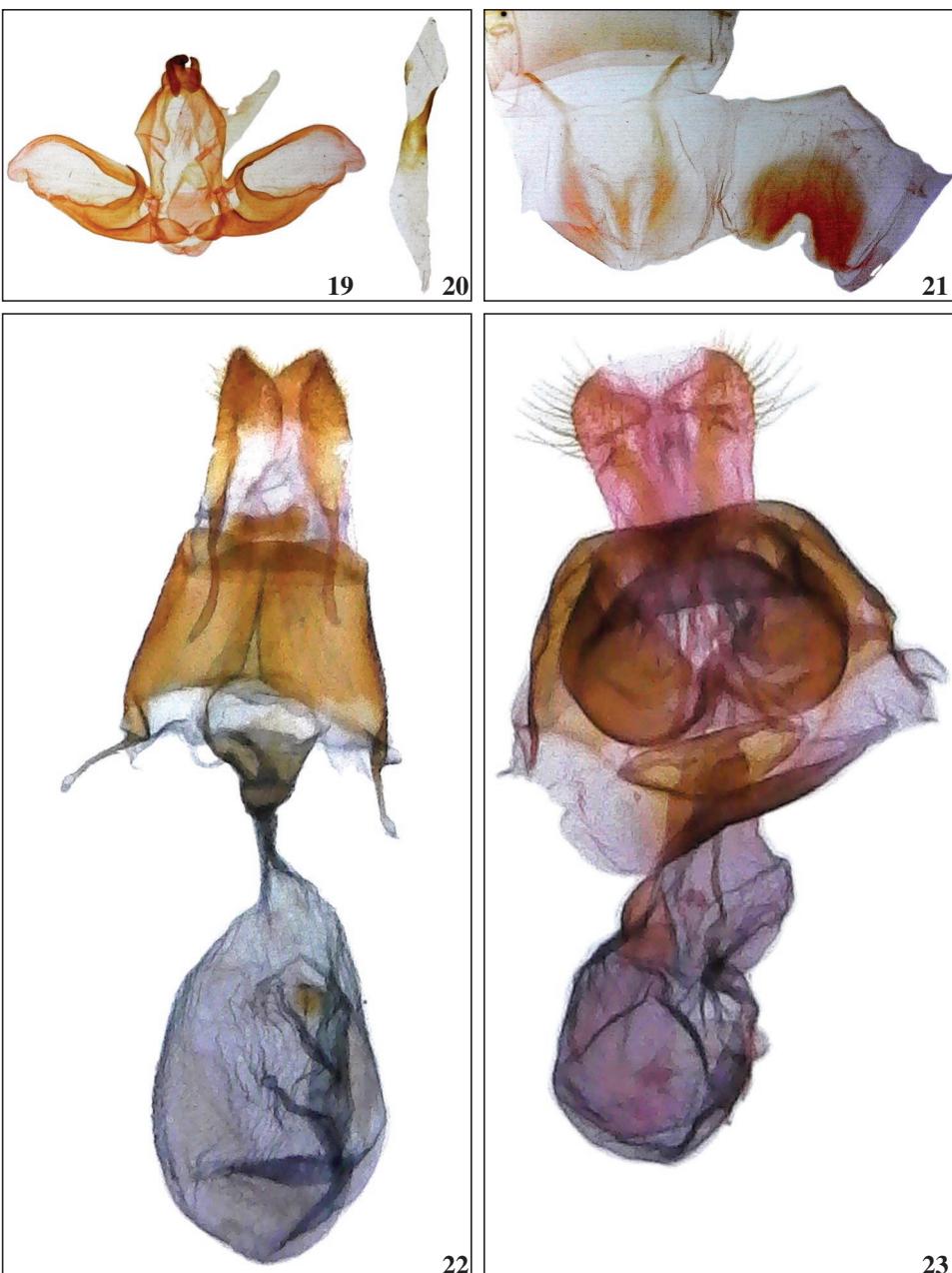
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Figs 1-8.- Adults of *Eustema* species, dorsal view. **1-4.** *E. dara* (Druce): **1.** ♂. **2.** ♀, Nicaragua. **3.** ♂. **4.** ♀, Brazil. **5-6.** *E. opaca* Schaus, Brazil: **5.** ♂. **6.** ♀. **7-8.** *Rapanodonta rapana* (Jones) (Brazil): **7.** ♂. **8.** ♀.



Figs 9-18.—9. *Eustema argentata* Becker, sp. n., ♀. Holotype. Brazil. 10-18. Genitalia (ventral view), and 8th abdominal segment of *Eustema* species: 10-12. *E. dara*: 10. ♂ genitalia, Nicaragua. 11. aedeagus, lateral view, Nicaragua. 12. 8th abdominal segment (left, tergite; right, sternite). 13-15. *E. opaca*: 13. ♂ genitalia. 14. aedeagus, lateral view; 15. 8th abdominal segment (left, sternite; right tergite). 16-18. *E. dara* 16. ♂ genitalia, Brazil. 17. aedeagus, lateral view, Brazil. 18. 8th abdominal segment (left, tergite; right, sternite).



Figs 19-21.—*Rapanodonta rapana*: 19. ♂ genitalia, ventral view. 20. aedeagus, lateral view. 21. 8th abdominal segment (left, tergite; right, sternite). **22-23.**—22. *Eustema dara* ♀ genitalia, Brazil; 23. *E. argentata* Becker, sp. n., ♀ genitalia, holotype.